



SEQUENCE LISTING

<110> Rodriguez, Moses
Miller, David J.
Pease, Larry R.

<120> Human IgM Antibodies and Diagnostic and Therapeutic Uses Thereof Particularly in the Central Nervous System

<130> 1199-1-005CIP2

<140> 10/010,729
<141> 2001-11-13

<150> 09/730,473
<151> 2000-12-05

<150> 09/580,787
<151> 2000-05-30

<150> 09/322,862
<151> 1999-05-28

<150> 08/779,784
<151> 1997-01-07

<150> 08/692,084
<151> 1996-08-08

<150> 08/236,520
<151> 1994-04-29

<160> 80

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tgcaaggcctt ctggttacac cttcacaagc tacgatataa actgggtgaa gcagaggcct 180
ggacaggcac ttgagtggat tggatggatt tattcctggag atggtagtac taagtacaat 240
gagaaaattca agggcaaggc cacactgact gcagacaaat cctccagcac agcctacatg 300
cagctcagca gcctgacttc tgagaactct gcagtctatt tctgtgcaag agggccagg 360
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<210> 2
<211> 395
<212> DNA
<213> Mus musculus

<400> 2
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gtcagctga agcagtctagg acctggctta gtgcagccct cacagagccct gtccatcacc 120
tgcacagtct ctggtttctc attaacttagc tatgggtgtac actgggttcg ccagtcctca 180
ggaaagggtc tggagtggct gggagtgata tggagtggtg gaagcacaga ctataatgca 240
gctttcatat ccagactgag catcagcaag gacgcttcca agagccaagt tttcttaaa 300
atgaacagtc tgcacgctac atatattatt gtgccagaga ctacggtagt agggggact 360
actgggtca aggaacctca gtcaccgtct cctca 395

<210> 3
<211> 423
<212> DNA
<213> Mus musculus

<400> 3
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tgtgcacatt ctgggttcac cttcagtgtat ttctacatgg agtgggtccg ccagocctca 180
ggaaagagac tggagtggat tgctgcaagt agaaagaaaag ctaatgatta taaaacagag 240
tacagtgcatt ctgtgaaggg gcgggttcacc gtctccagag acacttccc aagcatcctc 300
tacccctaga tgaatgccct gagagatgag gacactgcca ttattactg tgcaagagat 360
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gca 423

<210> 4
<211> 384
<212> DNA
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<400> 4
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aacattgtaa tgacccaatc tcccaaattc atgtccatgt cagtaggaga gagggtcacc 120
ttgacctgca aggccagtga gaatgtggtt actttagttt cctggtatca acagaaaacca 180
gagcagtctc ctaaactgct gatatacggg gcatccaacc ggtacactgg ggtccccat 240
cgcttcacag gcagtggatc tgcaacagat ttcaacttgc ccatcagcag tgtgcaggct 300
gaagaccttg cagattatca ctgtggacag gtttacagct atccgtacac gttccgaggg 360
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<210> 5
<211> 402
<212> DNA
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<400> 5
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agatgtgaca tccagatgac ccagtctcca tcctccttat ctgcctctct gggagaaaaga 120
gtcagtctca cttgtcgccc aagtctggac attggtagta gcttaaactg gcttcagcag 180
gaaccagatg gaactattaa acgcctgatc tacgccacat ccagtttaga ttctgggttg 240
cccaaaagggt tcagtggcag taggtctggg tcagattatt ctctcaccat cagcagcctt 300
gagtctgaag attttgtaga ctattactgt ctacaatatg cttagttctcc gtacacgttc 360
ggagggggga ccaagctgga aataaaaacgg gctgtatgtt ca 402

<210> 6
<211> 396
<212> DNA
<213> Mus musculus

<400> 6
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gacattgtga tgacccagtc tcacaaaattc atgtccactt cagtaggaga cagggtcagc 120
atcacctgca aggccagtca ggtatgtgagt actgctgttag cctggtatca acagaaacca 180
ggacaatctc ctaaactact gatttactcg gcacccctacc ggtacactgg agtccctgat 240
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<210> 7
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> VARIANT
<222> (50)...(50)
<223> Xaa can be Val or Ile

<221> VARIANT
<222> (89)...(89)
<223> Xaa can be Asp or Glu

<400> 7
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1 5 10 15
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Ser
20 25 30
Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45
Ala Xaa Ile Ser Tyr Asp Gly Ser Arg Lys Tyr Tyr Ala Asp Ser Val
50 55 60
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
65 70 75 80
Leu Gln Met Asn Ser Leu Thr Ala Xaa Asp Thr Ala Val Tyr Tyr Cys
85 90 95
Ala Lys Gly Val Thr Gly Ser Pro Thr Leu Asp Tyr Trp Gly Gln Gly
100 105 110
Thr Leu Val Thr Val Ser Ser
115

<210> 8
<211> 357
<212> DNA
<213> Homo sapiens

<220>
<221> variation
<222> (27)...(27)
<223> n is a or g

<221> variation
<222> (117)...(117)
<223> n is g or a

<400> 8
cagggtgcagc tgggtggagtc tgggggnggc gtgggtccagc ctggggaggtc cctgagactc 60
tcctgtgcag cctctggatt caccttcagt agctctggca tgcactgggt ccgccangct 120
ccaggcaagg ggctggagtg ggtggcagtt atatcatatg atggaagtaa taaatactat 180
gcagactccg tgaagggccg attcaccatc tccagagaca attccaagaa cacgctgtat 240
ctgcaaatga acagcctgag agctgaggac acggctgtgt attactgtgc gaaagaggtg 300
actgcttattc cctactttga ctactggggc cagggAACCC tggtcaccgt ctcctca 357

<210> 9
<211> 114
<212> PRT
<213> Homo sapiens

<220>
<221> VARIANT
<222> (46)...(46)
<223> Xaa is Arg or Lys

<221> VARIANT
<222> (90)...(90)
<223> Xaa is Gly or Glu

<400> 9
Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Ala Ala Pro Gly Gln
1 5 10 15
Lys Val Thr Ile Ser Cys Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn
20 25 30
Phe Val Ser Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Xaa Leu Leu
35 40 45
Ile Tyr Asp Ile Thr Lys Arg Pro Ser Gly Ile Pro Asp Arg Phe Ser
50 55 60
Gly Ser Lys Ser Gly Thr Ser Ala Thr Leu Gly Ile Thr Gly Leu Gln
65 70 75 80
Thr Gly Asp Glu Ala Asp Tyr Tyr Cys Xaa Thr Trp Asp Ser Ser Leu
85 90 95
Ser Ala Val Val Phe Gly Gly Thr Lys Leu Thr Val Leu Gly Gln
100 105 110
Pro Lys

<210> 10
<211> 342
<212> DNA
<213> Homo sapiens

<220>
<221> variation
<222> (137)...(137)
<223> n is g or a

<221> variation
<222> (269)...(269)
<223> n is g or a

<400> 10
cgatctgtgt tgacggagcc gccttcagtgc tctgctgccc caggacagaa ggtcaccatc 60

tcctgctctg gaagcagctc caacattggc aataatttg tatcctggta ccagcaactc 120
ccaggaacag ccccanact cctcatttat gacattacta agcgaccctc agggattcct 180
gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcacac cgactccag 240
actggggacg aggccgatta ttactgcgna acatgggata gcagcctgag tgctgtggta 300
ttcggcgcccc ggaccaagct gaccgtccta ggtcagccca ag 342

<210> 11
<211> 121
<212> PRT
<213> Homo sapiens

<400> 11
Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
1 5 10 15
Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Tyr
20 25 30
Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile
35 40 45
Gly Tyr Ile Tyr Tyr Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
50 55 60
Ser Arg Val Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu
65 70 75 80
Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
85 90 95
Arg Ser Ala Gln Gln Gln Leu Val Tyr Tyr Phe Asp Tyr Trp Gly Gln
100 105 110
Gly Thr Leu Val Thr Val Ser Ser Gly
115 120

<210> 12
<211> 370
<212> DNA
<213> Homo sapiens

<400> 12
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acctgcactg tctctgggtgg ctccatcagt agttactact ggagctggat ccggcagccc 120
ccagggaaagg gactggagtg gattgggtat atctattaca gtgggagcac caactacaac 180
ccctccctca agagtcgagt caccatatca gtagacacgt ccaagaacab ccagttctcc 240
ctgaagctga gctctgtgac cgctgcggac acggccabcg tgtattactg tgcgaggtcg 300
gcacagcagc agctggata ctacdtttga ctactgggc cagggAACCC tggtcaccgt 360
ctcctcaggg 370

<210> 13
<211> 119
<212> PRT
<213> Homo sapiens

<400> 13
Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
1 5 10 15
Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser
20 25 30
Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45
Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val

50	55	60	
Pro	Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr		
65	70	75	80
Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln			
	85	90	95
Tyr Tyr Ser Thr Pro Leu Thr Phe Gly Pro Gly Thr Lys Val Asp Ile			
	100	105	110
Lys Arg Thr Val Ala Ala Pro			
	115		

<210> 14
<211> 357
<212> DNA
<213> Homo sapiens

<400> 14
gacatcgta tgacccagtc tccagactcc ctggctgtgt ctctggcga gagggccacc 60
atcaactgca agtccagcca gagtgttta tacagctcca acaaataagaa ctacttagct 120
tggtaccaggc agaaaaccagg acagcctcct aagctgctca ttactggc atctacccgg 180
gaatccgggg tccctgaccg attcagtggc agcgggtctg ggacagattt cacttcacc 240
atcagcagcc tgcaggctga agatgtggca gtttattact gtcagcaata ttatagact 300
cctctcaactt tcggccctgg gaccaaagtg gatatcaaac gaactgtggc tgcacca 357

<210> 15
<211> 112
<212> PRT
<213> Homo sapiens

<400> 15
Ala Val Val Gln Pro Gly Arg Ser Leu Arg Leu Ser Cys Ala Ala Ser
1 5 10 15
Gly Phe Ile Phe Ser Ser Tyr Gly Met His Trp Val Arg Gln Val Pro
20 25 30
Gly Lys Gly Leu Glu Trp Val Ala Val Ile Trp Tyr Asp Gly Ser Asp
35 40 45
Lys Tyr Tyr Val Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp
50 55 60
Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu
65 70 75 80
Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Arg Ser Ser Gly Trp Tyr
85 90 95
Trp Ser Cys Asp Ser Trp Gly Gln Gly Thr Leu Val Ile Val Ser Ser
100 105 110

<210> 16
<211> 338
<212> DNA
<213> Homo sapiens

<400> 16
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tcagtagcta tggcatgcac tgggtccggc aggttccagg caaggggctg gagtggtgg 120
cagtttatatg gtatgtatggc agtgataaat actatgtaga ctccgtgaag ggccgattca 180
ccatctccag agacaattct aaaaacacgc tctatctgca aatgaacagc ctgagagccg 240
aggacacggc tgtgtattac tgtgcgagag atcgcagcag tggctgtac tggcctgac 300

actcctgggg ccagggaaacc ctggtcattg tctcctca

338

<210> 17
<211> 117
<212> PRT
<213> Homo sapiens

<400> 17
Leu Leu Ser Gly Ser Pro Gly Gln Ser Ile Thr Ile Ser Cys Thr Gly
1 5 10 15
Thr Ser Ser Asp Val Gly Gly Tyr Asn Tyr Val Ser Trp Tyr Gln Gln
20 25 30
His Pro Gly Lys Ala Pro Lys Leu Met Ile Tyr Asp Val Ser Asp Arg
35 40 45
Pro Ser Gly Val Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr
50 55 60
Ala Ser Leu Thr Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr
65 70 75 80
Tyr Cys Ser Ser Tyr Thr Ser Ser Ser Val Val Phe Gly Gly Gly
85 90 95
Thr Lys Leu Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr
100 105 110
Leu Phe Pro Pro Pro
115

<210> 18
<211> 358
<212> DNA
<213> Homo sapiens

<400> 18
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tgacgttgggtggtaact atgtctcctg gtaccaacag cacccaggca aagccccaa 120
actcatgatt tatgatgtca gtgatcgccct ctcaggggtt tctaattcgct tctctggctc 180
caagtctggc aacacggcct ccctgaccat ctctgggctc caggctgagg acgaggctga 240
ttattactgc agctcatata caagcagcag ctctgtggta ttccggcggag ggaccaagct 300
gaccgtccta ggtcagccca aggctgcccc ctcggtaact ctgttcccgc ctccaagg 358

<210> 19
<211> 120
<212> PRT
<213> Mus musculus

<400> 19
Gln Asp His Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
1 5 10 15
Phe Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn Tyr
20 25 30
Asp Leu Asn Trp Val Arg Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45
Gly Trp Ile Tyr Pro Gly Asn Asp Asn Thr Lys Tyr Asn Glu Lys Phe
50 55 60
Lys Gly Leu Ala Ser Leu Thr Ala Asp Lys Ser Ser Thr Thr Ala Tyr
65 70 75 80
Leu His Leu Ser Ser Leu Thr Ser Glu Ser Ser Ala Val Tyr Phe Cys
85 90 95

Ala Arg Gly Leu Pro Arg Gly Trp Tyr Phe Asp Val Trp Gly Ala Gly
100 105 110
Thr Thr Val Thr Val Ser Ser Ala
115 120

<210> 20
<211> 360
<212> DNA
<213> Mus musculus

<400> 20
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tcctgcagg cttctggta caccctcaca aactacgatc taaactgggt gaggcagagg 120
cctggacagg gccttgagtg gattggatgg atttacccctg gaaatgataa tactaagtac 180
aatgagaagt tcaaggccct ggcctcactg actgcagaca agtcctccac cacagcctac 240
ttgcatctca gcagcctgac ttctgagagc tctgcagtct atttctgtgc aagagggtta 300
ccttagggct ggtacttcga tgtctggggc gcagggacca cggtcaccgt ctccctcagct 360

<210> 21
<211> 101
<212> PRT
<213> Mus musculus

<400> 21
Asn Ile Val Met Thr Gln Ser Pro Lys Ser Met Ser Met Ser Val Gly
1 5 10 15
Glu Arg Val Thr Leu Thr Cys Lys Ala Ser Glu Asn Val Val Thr Tyr
20 25 30
Val Ser Trp Tyr Gln Gln Lys Pro Glu Gln Ser Pro Lys Leu Leu Ile
35 40 45
Tyr Gly Ala Ser Asn Arg Tyr Thr Gly Val Pro Asp Arg Phe Thr Gly
50 55 60
Ser Gly Ser Ala Thr Asp Phe Thr Leu Thr Ile Ser Ser Val Gln Ala
65 70 75 80
Glu Asp Leu Ala Asp Tyr His Cys Gly Gln Gly Tyr Ser Tyr Pro Tyr
85 90 95
Thr Phe Gly Gly Gly
100

<210> 22
<211> 303
<212> DNA
<213> Mus musculus

<400> 22
aacattgtaa tgacccaatc tcccaaattc atgtccatgt cagtaggaga gagggtcacc 60
ttgacctgca aggccagtga gaatgtgggtt acttatgttt cctggtatca acagaaaacca 120
gagcagtctc ctaaactgct gatatacggg gcatccaacc ggtacactgg ggtccccat 180
cgcttcacag gcagtggatc tgcaacagat ttcaactctga ccatcagcag tgtgcaggct 240
gaagaccttg cagattatca ctgtggacag ggttacagct atccgtacac gttcggaggg 300
ggg 303

<210> 23
<211> 101

<212> PRT
<213> Mus musculus

<400> 23
Asp Val Gln Ile Thr Gln Ser Pro Ser Tyr Leu Ala Ala Phe Pro Gly
1 5 10 15
Glu Thr Ile Thr Ile Asn Cys Arg Ala Ser Lys Ser Ile Ser Lys Tyr
20 25 30
Leu Ala Trp Tyr Gln Glu Arg Pro Gly Lys Thr Asn Lys Leu Leu Ile
35 40 45
Tyr Ser Gly Ser Thr Leu Gln Ser Gly Ile Pro Ser Arg Phe Ser Gly
50 55 60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
65 70 75 80
Glu Asp Phe Ala Met Tyr Tyr Cys Gln Gln His Asn Glu Tyr Pro Tyr
85 90 95
Thr Phe Gly Gly Gly
100

<210> 24
<211> 303
<212> DNA
<213> Mus musculus

<400> 24
gatgtccaga taacccagtc tccatcttat cttgctgcat ttcctggaga aaccattact 60
attaattgtt gggcaagtaa gagcattagt aaatatttag cctggtatca agagagacct 120
ggaaaaacta ataagcttct tatctactct ggatccactt tgcaatctgg aattccatca 180
aggttcagtg gcagtggatc tggtacagat ttcactctca ccatcagtag cctggaggct 240
gaagattttt caatgttata ctgtcaacag cataatgaat acccgataac gttcggaggg 300
ggg 303

<210> 25
<211> 124
<212> PRT
<213> Homo sapiens

<400> 25
Glu Val Gln Leu Leu Glu Ser Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Ser Phe Ile Asp Tyr
20 25 30
Ala Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45
Ser Ser Leu Ser Gly Asp Ser Gly Ser Ser Tyr Tyr Ala Asp Ser Val
50 55 60
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Ser Thr Val Phe
65 70 75 80
Leu Gln Leu Ser Ser Leu Arg Ala Glu Asp Thr Ala Ile Tyr Tyr Cys
85 90 95
Ala Gln Glu Thr Gly Pro Gln Arg Arg Trp Gly Gln Gly Thr Leu Val
100 105 110
Thr Val Ser Ser Gly Ser Ala Ser Ala Pro Thr Leu
115 120

<210> 26
<211> 372
<212> DNA
<213> Homo sapiens

<400> 26
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tcctgtcgag cctctggatt cagctttatc gactatgcc a tagctgggt ccggccaggct 120
ccagggaaagg gactggagtg ggtctcaagt ctttagtggtg atagtggtag ttcatattat 180
gcagactccg tgaagggccg attcaccatc tccagagaca attccaagag cacggtgttt 240
ctgcaactga gcagcctgag agccgaggac acggccatat attactgtgc gcaggagacc 300
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gcccccaaccc tt 372

<210> 27
<211> 116
<212> PRT
<213> Homo sapiens

<400> 27
Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly
1 5 10 15
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Ser Trp
20 25 30
Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45
Tyr Lys Ala Phe Asn Leu Glu Ser Gly Val Pro Ser Arg Phe Arg Gly
50 55 60
Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80
Asp Asp Ser Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Ser Tyr Pro Leu
85 90 95
Thr Phe Gly Gly Thr Lys Val Asp Ile Lys Arg Thr Val Ala Ala
100 105 110
Pro Ser Val Phe
115

<210> 28
<211> 348
<212> DNA
<213> Homo sapiens

<400> 28
gacatccaga tgacccagtc tccttccacc ctgtctgcat ctgttagggga cagagtcacc 60
atcaacttgcc gggccagtca gagtattagt agctggttgg cctggtatca gcagaaaacca 120
ggggaaagccc ctaaactcct gatctataag gcgttaatt tagaaagtgg ggtcccatca 180
aggttcagag gcagtggctc tgggacagaa ttcactctca ccatcagcag cctgcagcct 240
gatgattctg caacttatta ctgccagcag tata>tagtt acccccctcac tttcggcgga 300
gggaccaagg tggacattaa acgaactgtg gctgcaccat ctgtcttc 348

<210> 29
<211> 106
<212> PRT
<213> Homo sapiens

<400> 29

Arg Lys Glu Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr
1 5 10 15
Phe Thr Gly Tyr Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly
20 25 30
Leu Glu Trp Met Gly Trp Ile Asn Pro Asn Ser Gly Gly Thr Asn Tyr
35 40 45
Ala Gln Lys Phe Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser Ile
50 55 60
Ser Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala
65 70 75 80
Val Tyr Tyr Cys Ala Arg Asp Arg Ser Tyr Pro Gly Arg Asn Tyr Phe
85 90 95
Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr
100 105

<210> 30

<211> 327

<212> DNA

<213> Homo sapiens

<400> 30

ccaggagaag aaacggaggc ctcagtgaag gtctcctgca aggcttctgg atacacccttc 60
accggctact atatgcactg ggtgcgacag gcccctggac aagggcttga gtggatggga 120
tggatcaacc ctaacagtgg tggcacaaac tatgcacagenta agtttcaggg cagggtcacc 180
atgaccaggg acacgtccat cagcacagcc tacatggagc tgagcaggct gagatctgac 240
gacacggccg tgtattactg tgcgagagat cgatcgatc cgggaaggaa ctacttgac 300
tactggggcc aggaaacctt ggtcacc 327

<210> 31

<211> 101

<212> PRT

<213> Homo sapiens

<400> 31

Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly
1 5 10 15
Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ser
20 25 30
Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
35 40 45
Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser
50 55 60
Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu
65 70 75 80
Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Ser Ser His
85 90 95
Thr Phe Gly Gln Gly
100

<210> 32

<211> 303

<212> DNA

<213> Homo sapiens

<400> 32

gaaattgtgt tgacgcagtc tccaggcacc ctgtctttgt ctccagggga aagagccacc 60
ctctcctgca gggccagtca gagtgtagc agcagactact tagcctggta ccagcagaaa 120
cctggccagg ctcccaggct cctcatctat ggtgcatacca gcagggccac tggcatccca 180
gacaggttca gtggcagtgg gtctggaca gacttcactc tcaccatca cagactggag 240
cctgaagatt ttgcagtgta ttactgtcag cagtatggta gctctcacac ttttggccag 300
ggg 303

<210> 33
<211> 109
<212> PRT
<213> Homo sapiens

<400> 33
Gly Leu Val Lys Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser
1 5 10 15
Gly Phe Thr Phe Ser Asp Tyr Tyr Met Ser Trp Ile Arg Gln Ala Pro
20 25 30
Gly Lys Gly Leu Glu Trp Val Ser Tyr Ile Ser Ser Ser Ser Tyr
35 40 45
Thr Asn Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp
50 55 60
Asn Ala Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu
65 70 75 80
Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Arg Ser Ser Ser Trp
85 90 95
Tyr Tyr Tyr Tyr Gly Met Asp Val Trp Gly Gln Gly
100 105

<210> 34
<211> 329
<212> DNA
<213> Homo sapiens

<400> 34
gaggcttggta caagcctgga gggccctgaa gactctcctg tgccgcctct ggattcacct 60
tcagtgacta ctacatgagc tggatccgcc aggctccagg gaaggggctg gagtgggttt 120
catacattag tagtagtagt agttacacaa actacgcaga ctctgtgaag ggccgattca 180
ccatctccag agacaacgc aagaactcac tgtatctgca aatgaacagc ctgagagccg 240
aggacacggc tgtgtattac tgtgcgagag atcggtcgag cagcagctgg tactactact 300
actacggtat ggacgtctgg ggccaaggg 329

<210> 35
<211> 102
<212> PRT
<213> Homo sapiens

<400> 35
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30
Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Val Pro Lys Leu Leu Ile
35 40 45
Tyr Ala Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Asn Gly
50 55 60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro

65	70	75	80
Glu Asp Val Ala Thr Tyr Tyr Cys Gln Lys	Tyr Asn Lys Cys Pro Ser		
	85	90	95
His Phe Arg Gly Arg Asp			
	100		

<210> 36
<211> 306
<212> DNA
<213> *Homo sapiens*

```
<400> 36
gacatccaga tgacctcagtc tccatcctcc ctgtctgcat ctgttaggaga cagagtcacc 60
atcaacttgcc gggcgagtca gggcatttagc aattattttag cctggtatca gcagaaacca 120
gggaaaagttc ctaagctcct gatctatgct gcatccactt tgcaatcagg ggtcccatct 180
cggttcaatg gcagtggatc tgggacagat ttcactctca ccatcagcag cctgcaacct 240
gaagatgttg caacttatta ctgtcaaaag tataacaagt gcccctctca ctttcgggggg 300
aggcac 306
```

<210> 37
<211> 105
<212> PRT
<213> *Homo sapiens*

```

<400> 37
Asp Ile Ala Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
      1           5           10          15
Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Arg Ser Val Leu Phe Ser
      20          25          30
Ser Asn Asn Asn Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
      35          40          45
Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
      50          55          60
Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
      65          70          75          80
Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
      85          90          95
Tyr Tyr Ser Thr Pro Ile Thr Phe Gly
      100         105

```

<210> 38
<211> 315
<212> DNA
<213> *Homo sapiens*

```
<400> 38
gacatcgca tgacctcagtc tccagactcc ctggcagtgt ctctggcga gagggccacc 60
atcaactgca agtccagccg gagtgtttta tttagtcca acaataacaa ctacttagct 120
tggtagccaggc agaaaaccagg acagccctct aagctactca tttagtggc atctaccgg 180
gaatccgggg tccctgaccg attcagtggc agcgggtctg ggacagattt cactctcacc 240
atcagcagcc tgaggctga agatgtggca gtttattact gtcagcaata ttatagttact 300
ccaatcacct tcggc 315
```

<210> 39
<211> 101

<212> PRT

<213> Mus musculus

<400> 39

Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly
1 5 10 15
Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp Val Ser Thr Ala
20 25 30
Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile
35 40 45
Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp Arg Phe Thr Gly
50 55 60
Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Val Gln Ala
65 70 75 80
Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Leu
85 90 95
Thr Phe Gly Ala Gly
100

<210> 40

<211> 303

<212> DNA

<213> Mus musculus

<400> 40

gacatcgtaa tgacgcagtc tcacaaattc atgtccactt cagtaggaga cagggtcagc 60
atcacctgca aggccagtca ggatgtgagt actgctgtag cctggtatca acagaaaacca 120
gcacaatctc ctaaaactact gatttactcg gcacccctacc ggtacactgg agtccctgtat 180
cgcttcactg gcagtggatc tggacggat ttcactttca ccatcagcag tgtgcaggct 240
gaagacctgg cagtttatta ctgtcagcaa cattatacta ctccgctcac gttcggtgct 300
ggg 303

<210> 41

<211> 101

<212> PRT

<213> Mus musculus

<400> 41

Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly
1 5 10 15
Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp Val Ser Thr Ala
20 25 30
Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile
35 40 45
Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp Arg Phe Thr Gly
50 55 60
Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Val Gln Ala
65 70 75 80
Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Leu
85 90 95
Thr Phe Gly Ala Gly
100

<210> 42

<211> 303

<212> DNA
<213> Mus musculus

<400> 42
gacatcgtaa tgacgcagtc tcacaaattc atgtccactt cagtaggaga cagggtcagc 60
atcacctgca aggccagtca ggatgtgagt actgctgtag cctggtatca acagaaaacca 120
ggacaatctc ctaaactact gatttactcg gcacccctacc ggtacactgg agtccctgat 180
cgcttcactg gcagtggatc tgggacggat ttcactttca ccatcagcag tgtgcaggct 240
gaagacctgg cagtttatta ctgtcagcaa cattatacta ctccgctcac gttcgggtgct 300
ggg 303

<210> 43
<211> 108
<212> PRT
<213> Mus musculus

<400> 43
Asp Val Gln Ile Thr Gln Ser Pro Ser Tyr Leu Ala Ala Ser Pro Gly
1 5 10 15
Glu Thr Ile Thr Ile Asn Cys Arg Ala Ser Lys Ser Ile Ser Lys Tyr
20 25 30
Leu Ala Trp Tyr Gln Glu Lys Pro Gly Lys Thr Asn Lys Leu Leu Ile
35 40 45
Tyr Ser Gly Ser Thr Leu Gln Ser Gly Ile Pro Ser Arg Phe Ser Gly
50 55 60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
65 70 75 80
Glu Asp Phe Ala Met Tyr Tyr Cys Gln Gln His Asn Glu Tyr Pro Tyr
85 90 95
Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 44
<211> 324
<212> DNA
<213> Mus musculus

<400> 44
gatgtccaga taacccagtc tccatcttat cttgctgcat ctcctggaga aaccattact 60
attaattgca gggcaagtaa gagcattagc aaatatttag cctggtatca agagaaaacct 120
ggggaaaacta ataagcttct tatctactct ggtccactt tgcaatctgg aattccatca 180
aggttcagtg gcagtggatc tggtacagat ttcactctca ccatcagtag cctggagcct 240
gaagattttg caatgttata ctgtcaacag cataatgaat acccgtacac gttcggaggg 300
gggaccaagc tggaaataaaa acgg 324

<210> 45
<211> 108
<212> PRT
<213> Mus musculus

<400> 45
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15
Glu Arg Val Ser Leu Thr Cys Arg Ala Ser Gln Asp Ile Gly Ser Ser
20 25 30
Leu Asn Trp Leu Gln Gln Glu Pro Asp Gly Thr Ile Lys Arg Leu Ile

35	40	45
Tyr Ala Thr Ser Ser Leu Asp Ser Gly Val Pro Lys Arg Phe Ser Gly		
50	55	60
Ser Arg Ser Gly Ser Asp Tyr Ser Leu Thr Ile Ser Ser Leu Glu Ser		
65	70	75
Glu Asp Phe Val Asp Tyr Tyr Cys Leu Gln Tyr Ala Ser Phe Pro Tyr		
85	90	95
Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Arg		
100	105	

<210> 46
<211> 324
<212> DNA
<213> Mus musculus

<400> 46
gacatccaga tgacccagtc tccatcctcc ttatctgcct ctctggaga aagagtca 60
ctcacttgc gggcaagtca ggacattggg agtagctaa actggctca gcaggaacca 120
gatggaacta ttaaacgcct gatctacgcc acatccagtt tagattctgg tgtccccaaa 180
aggttcagtg gcagtaggtc tgggtcagat tattctctca ccatcagcag ctttgagtct 240
gaagattttg tagactattt ctgtctacaa tatgcttagtt ttccgtacac gttcggaggg 300
gggaccaagc tggaaataaa acgg 324

<210> 47
<211> 107
<212> PRT
<213> Mus musculus

<400> 47
Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
1 5 10 15
Glu Lys Val Thr Ile Ser Cys Ser Ala Ser Ser Ser Val Ser Tyr Met
20 25 30
Tyr Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Lys Pro Trp Ile Tyr
35 40 45
Arg Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
50 55 60
Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Met Glu Ala Glu
65 70 75 80
Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Tyr His Ser Tyr Pro Leu Thr
85 90 95
Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg
100 105

<210> 48
<211> 321
<212> DNA
<213> Mus musculus

<400> 48
caaattgttc tcacccagtc tccagcaatc atgtctgcat ctccaggggga gaaggtcacc 60
atatcctgca gtgccagctc aagtgttgt tacatgtact ggtaccagca gaagccagga 120
tcctccccca aaccctggat ttatcgacaca tccaacctgg cttctggagt ccctgctcgc 180
ttcagtggca gtgggtctgg gacctttac tctctacaa tcagcagcat ggaggctgaa 240
gtatgtgcacca cttattactg ccagcagttt catagttacc cactcagctt cggtgctggg 300

accaagctgg agctgaaacg g

321

<210> 49
<211> 124
<212> PRT
<213> Homo sapiens

<400> 49
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
20 25 30
Trp Met Thr Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Met Val
35 40 45
Ala Asn Ile Lys Lys Asp Gly Ser Glu Lys Ser Tyr Val Asp Ser Val
50 55 60
Lys Gly Arg Phe Thr Thr Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65 70 75 80
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95
Ala Arg Pro Asn Cys Gly Gly Asp Cys Tyr Leu Pro Trp Tyr Phe Asp
100 105 110
Leu Trp Gly Arg Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 50
<211> 372
<212> DNA
<213> Homo sapiens

<400> 50
gagggtgcagc tgggtggagtc tggggggaggc ttgggtccagc ctgggggggtc cctgagactc 60
tcctgtgcag cctctggatt caccttttagt agctattgga tgacctgggt ccgccaggct 120
ccagggaaagg ggctggagtg ggtggccaac ataaagaaag atggaagtga gaaatcctat 180
gtggactctg tgaagggccc attcaccacc tccagagaca acgccaagaaa ctcactgtat 240
ctgcaaatga acagcctgag agccgaggac acggctgtgt attactgtgc gagacccaat 300
tgtggtggtg actgctattt accatggtaa ttcgatctct gggccgtgg caccctggtc 360
actgtctcct ca 372

<210> 51
<211> 122
<212> PRT
<213> Homo sapiens

<400> 51
Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
1 5 10 15
Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser
20 25 30
Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45
Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60
Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80
Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln

85 90 95
Tyr Tyr Asn Thr Pro Gln Ala Phe Gly Gln Gly Thr Lys Val Glu Ile
100 105 110
Lys Arg Thr Val Ala Ala Pro Ser Val Phe
115 120

<210> 52
<211> 366
<212> DNA
<213> Homo sapiens

<400> 52
gacatcgta tgacccagtc tccagactcc ctggctgtgt ctctggcga gagggccacc 60
atcaactgca agtccagcca gagtgttta tacagctcca acaataagaa ctacttagct 120
tggtaccaggc agaaaccagg acagcctcct aaactactca tttactgggc atctaccgg 180
gaatccgggg tccctgaccg attcagtggc agcgggtctg ggacagattt cactctcacc 240
atcagcagcc tgcaggctga agatgtggca gtttattact gtcagcaata ttataatact 300
cctcaggcgt tcggccaagg gaccaagggtg gaaatcaaacc gaactgtggc tgcaccatct 360
gtcttc 366

<210> 53
<211> 78
<212> DNA
<213> primerArtificial Sequence

<220>
<223> primer

<400> 53
actcccaagt cggctcgctt tctcttcagt gacaaacaca gacatagaac attcaccatg 60
ggatggagct gtatcact : 78

<210> 54
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 54
actgactctc ttaattaaga ctcacctgag gagactgtga gagtgg 47

<210> 55
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 55
ttggcgccaaagactcag cctggacatg atgtcctctg ctcagttc 48

<210> 56
<211> 43

<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 56
atagtttagc ggccgcattc ttatctaaca ctctccctg ttg 43

<210> 57
<211> 155
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 57
gactcggtcc gcccagccac tggaaagtgcg cgggtttcc attcggtgat catcaactgaa 60
cacagaggac tcaccatgga gtttgggctg agctgggtt tcctcggtgc tcttttaaga 120
ggtgtccagt gtcaggtgca gctgggtggag tctgg 155

<210> 58
<211> 56
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 58
ccttaattaa gacctggaga ggccattctt acctgaggag acggtgacca gggttc 56

<210> 59
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 59
ctagctagcg tccttaggtca gccccaggct gcccc 36

<210> 60
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 60
atagtttagc ggccgcacct atgaacattc tgtagg 36

<210> 61
<211> 111

<212> DNA
 <213> Artificial Sequence

<220>
 <223> primer

<400> 61
 ctagctagcc cgaatttcgg gacaatcttc atcatgacct gctccctct cctcctcacc 60
 ctcttcattc actgcacagg gtcctggcc cagtctgtgt tgacgcagcc g 111

<210> 62
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer

<400> 62
 gggcagcctt gggctgagct aggacggtca gc 32

<210> 63
 <211> 393
 <212> DNA
 <213> Mus musculus

<400> 63
 atgatgtcct ctgctcagtt ccttggtctc ctgttgctct gttttcaagg taccagatgt 60
 gatatccaga tgacacagac tacatcctcc ctgtctgcct ctctgggaga cagagtcacc 120
 atcagttgca gggcaagtca ggacattagc aattatttaa actggtatca gcagaaaacca 180
 gatggaactg tttaaactcct gatctactac acatcaagat tacactcagg agtcccata 240
 aggttcagtg gcagtgggtc tggAACAGAT tattctctca ccattagcaa cctggagcaa 300
 gaagatattg ccacttactt ttgccaacag ggtAATACGC ttccgtggac gttcggtgaa 360
 ggcaccaagc tggAAATCAA acgggctgat gct 393

<210> 64
 <211> 131
 <212> PRT
 <213> Mus musculus

<400> 64
 Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Cys Phe Gln
 1 5 10 15
 Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser
 20 25 30
 Ala Ser Leu Gly Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp
 35 40 45
 Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val
 50 55 60
 Lys Leu Leu Ile Tyr Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser
 65 70 75 80
 Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser
 85 90 95
 Asn Leu Glu Gln Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asn
 100 105 110
 Thr Leu Pro Trp Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Arg
 115 120 125

Ala Asp Ala
130

<210> 65
<211> 429
<212> DNA
<213> Mus musculus

<400> 65
atgggatgga gctgttatcat cctcttttg gtagcagcag ctacaggtgt ccactccag 60
gtccaactgc agcagcctgg gactgaactg gtgaaggctg gggcttcagt gaagctgtcc 120
tgcaaggctt ctggctacac cttcaccagc tactggatgc actgggtgaa gcagaggcct 180
ggacaaggcc ttgagtggat tggaaatatt aatcctagca atgggtggta taactacaat 240
gagaagttca agagcaaggc cacactgact gtagacaaat cctccagcac agcctacatg 300
cagctcagca gcctgacatc tgaggactct gcggcttatt attgtgcaag acgggcccct 360
tactacggta gtaggaactt tgactactgg ggccaaggca ccactctcac agtctcctca 420
gagagtca 429

<210> 66
<211> 143
<212> PRT
<213> Mus musculus

<400> 66
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Ala Ala Thr Gly
1 5 10 15
Val His Ser Gln Val Gln Leu Gln Gln Pro Gly Thr Glu Leu Val Lys
20 25 30
Pro Gly Ala Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45
Thr Ser Tyr Trp Met His Trp Val Lys Gln Arg Pro Gly Gln Gly Leu
50 55 60
Glu Trp Ile Gly Asn Ile Asn Pro Ser Asn Gly Gly Thr Asn Tyr Asn
65 70 75 80
Glu Lys Phe Lys Ser Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser
85 90 95
Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val
100 105 110
Tyr Tyr Cys Ala Arg Arg Ala Pro Tyr Tyr Gly Ser Arg Asn Phe Asp
115 120 125
Tyr Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser Glu Ser Gln
130 135 140

<210> 67
<211> 138
<212> PRT
<213> Mus musculus

<400> 67
Met Gly Trp Arg Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
1 5 10 15
Val His Cys Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys
20 25 30
Pro Gly Ala Leu Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Thr	Ser	Tyr	Asp	Ile	Asn	Trp	Val	Lys	Gln	Arg	Pro	Gly	Gln	Gly	Leu
50						55					60				
Glu	Trp	Ile	Gly	Trp	Ile	Tyr	Pro	Gly	Asp	Gly	Ser	Thr	Lys	Tyr	Asn
65					70					75					80
Glu	Lys	Phe	Lys	Gly	Lys	Ala	Thr	Leu	Thr	Ala	Asp	Lys	Ser	Ser	Ser
						85			90						95
Thr	Ala	Tyr	Met	Gln	Leu	Ser	Ser	Leu	Thr	Ser	Glu	Asn	Ser	Ala	Val
						100			105						110
Tyr	Phe	Cys	Ala	Arg	Gly	Ala	Arg	Phe	Tyr	Trp	Tyr	Phe	Asp	Val	Trp
							115		120						125
Gly	Ala	Gly	Thr	Thr	Val	Thr	Val	Ser	Ser						
						130		135							

<210> 68
<211> 135
<212> PRT
<213> Mus musculus

<400> 68
 Met Ala Val Leu Gly Leu Leu Phe Cys Leu Val Thr Phe Pro Ser Cys
 1 5 10 15
 Val Leu Ser Gln Val Gln Leu Lys Gln Ser Gly Pro Gly Leu Val Gln
 20 25 30
 Pro Ser Gln Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu
 35 40 45
 Thr Ser Tyr Gly Val His Trp Val Arg Gln Ser Pro Gly Lys Gly Leu
 50 55 60
 Glu Trp Leu Gly Val Ile Trp Ser Gly Gly Ser Thr Asp Tyr Asn Ala
 65 70 75 80
 Ala Phe Ile Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln
 85 90 95
 Val Phe Phe Lys Met Asn Ser Leu Gln Ser Asn Asp Thr Ala Ile Tyr
 100 105 110
 Tyr Cys Ala Arg Asp Cys Gly Ser Arg Gly Asp Tyr Trp Gly Gln Gly
 115 120 125
 Thr Ser Val Thr Val Ser Ser
 130 135

<210> 69
<211> 143
<212> PRT
<213> *Mus musculus*

```

<400> 69
Met Lys Leu Trp Leu Asn Trp Val Phe Leu Leu Thr Leu Leu His Gly
      1           5           10          15
Ile Gln Cys Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Gln
      20          25          30
Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe
      35          40          45
Ser Asp Phe Tyr Met Glu Trp Val Arg Gln Pro Pro Gly Lys Arg Leu
      50          55          60
Glu Trp Ile Ala Ala Ser Arg Asn Lys Ala Asn Asp Tyr Thr Thr Glu
      65          70          75          80
Tyr Ser Ala Ser Val Lys Gly Arg Phe Ile Val Ser Arg Asp Thr Ser

```

85	90	95
Gln Ser Ile Leu Tyr Leu Gln Met Asn Ala Leu Arg Ala Glu Asp Thr		
100	105	110
Ala Ile Tyr Tyr Cys Ala Arg Asp Ala Arg Gln Leu Gly Leu Pro Ala		
115	120	125
Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala		
130	135	140

<210> 70
<211> 128
<212> PRT
<213> *Mus musculus*

```

<400> 70
Met Glu Ser Gln Thr Leu Val Phe Ile Ser Ile Leu Leu Trp Leu Tyr
      1           5           10          15
Gly Ala Asp Gly Asn Ile Val Met Thr Gln Ser Pro Lys Ser Met Ser
      20          25          30
Met Ser Val Gly Glu Arg Val Thr Leu Thr Cys Lys Ala Ser Glu Asn
      35          40          45
Val Val Thr Tyr Val Ser Trp Tyr Gln Gln Lys Pro Glu Gln Ser Pro
      50          55          60
Lys Leu Leu Ile Tyr Gly Ala Ser Asn Arg Tyr Thr Gly Val Pro Asp
      65          70          75          80
Arg Phe Thr Gly Ser Gly Ser Ala Thr Asp Phe Thr Leu Thr Ile Ser
      85          90          95
Ser Val Gln Ala Glu Asp Leu Ala Asp Tyr His Cys Gly Gln Gly Tyr
      100         105         110
Ser Tyr Pro Tyr Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Arg
      115         120         125

```

<210> 71
<211> 130
<212> PRT
<213> *Mus musculus*

```

<400> 71
Met Asp Met Arg Ala Pro Ala Gln Ile Phe Gly Phe Leu Leu Leu Leu
      1           5           10          15
Phe Gln Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser
      20          25          30
Leu Ser Ala Ser Leu Gly Glu Arg Val Ser Leu Thr Cys Arg Ala Ser
      35          40          45
Gln Asp Ile Gly Ser Ser Leu Asn Trp Leu Gln Gln Glu Pro Asp Gly
      50          55          60
Thr Ile Lys Arg Leu Ile Tyr Ala Thr Ser Ser Leu Asp Ser Gly Val
      65          70          75          80
Pro Lys Arg Phe Ser Gly Ser Arg Ser Gly Ser Asp Tyr Ser Leu Thr
      85          90          95
Ile Ser Ser Leu Glu Ser Glu Asp Phe Val Asp Tyr Tyr Cys Leu Gln
      100         105         110
Tyr Ala Ser Ser Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
      115         120         125
Lys Arg
      130

```

<210> 72
<211> 128
<212> PRT
<213> Mus musculus

<400> 72

Met Glu Ser Gln Ile Gln Val Phe Val Phe Val Phe Leu Trp Leu Ser
1 5 10 15
Gly Val Asp Gly Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser
20 25 30
Thr Ser Val Gly Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp
35 40 45
Val Ser Thr Ala Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro
50 55 60
Lys Leu Leu Ile Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp
65 70 75 80
Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser
85 90 95
Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr
100 105 110
Thr Thr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg
115 120 125

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cagctggtgg agtctggggg aggcttggtc cagcctgggg ggtccctgag actctcctgt 180
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agcctgagag ccgaggacac ggctgtgtat tactgtgcga gacccaattt tggtgggtac 180
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<212> DNA
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<220>
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<400> 76
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<210> 77
<211> 105
<212> DNA
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<220>
<223> 5' primer with leader sequence

<400> 77
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ttgctctgga tctctggc ctacggggac atcgtgatga cccag 105

<210> 78
<211> 105
<212> DNA
<213> Artificial Sequence

<220>
<223> 3' primer

<400> 78
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<210> 79
<211> 39
<212> DNA
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<220>
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<400> 79
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<210> 80

<220>
<223> 5' primer

<400> 80
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